

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Commissioner
 US Department of Commerce
 United States Patent and Trademark
 Office, PCT
 2011 South Clark Place Room
 CP2/5C24
 Arlington, VA 22202
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 26 June 2001 (26.06.01)	Applicant's or agent's file reference CJH01467WO
International application No. PCT/GB00/03643	Priority date (day/month/year) 07 October 1999 (07.10.99)
International filing date (day/month/year) 22 September 2000 (22.09.00)	
Applicant TAYLOR, Alan	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

02 May 2001 (02.05.01)

☐ in a notice effecting later election filed with the International Bureau on:2. The election ☒ was☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland	Authorized officer Pascal Piriou
Facsimile No.: (41-22) 740.14.35	Telephone No.: (41-22) 338.83.38

INTERNATIONAL SEARCH REPORT

Interr [REDACTED] Application No
PCT/GB 00/03643

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C09D4/06 C08F283/12 C08F275/00 C08G77/442 C08J7/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08F C08G C09D C08J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 921 881 A (MORLOCK GERHARD ET AL) 1 May 1990 (1990-05-01) the whole document ---	1-20
X	US 5 470 910 A (SPANHEL LUBOMIR ET AL) 28 November 1995 (1995-11-28) claim 1 ---	1, 18
X	EP 0 851 009 A (MATSUSHITA ELECTRIC WORKS LTD) 1 July 1998 (1998-07-01) page 5, line 49 -page 6, line 6; claims 1,6,10 page 9, line 17-30 ---	1-3, 18
A	US 5 424 375 A (HE XIONGWEI ET AL) 13 June 1995 (1995-06-13) column 2, line 40-59 --- -/--	1

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- *A* document defining the general state of the art which is not considered to be of particular relevance
- *E* earlier document but published on or after the international filing date
- *L* document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- *O* document referring to an oral disclosure, use, exhibition or other means
- *P* document published prior to the international filing date but later than the priority date claimed

- *T* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- *X* document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- *Y* document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- *G* document member of the same patent family

Date of the actual completion of the international search

21 December 2000

Date of mailing of the international search report

05/01/2001

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Meulemans, R

INTERNATIONAL SEARCH REPORT

Interr Application No
PCT/GB 00/03643

C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	EP 0 918 061 A (ORIENT CHEMICAL IND ; OSAKA MUNICIPAL GOVERNMENT (JP)) 26 May 1999 (1999-05-26) page 3, line 29-34 ----	1
A	US 5 385 988 A (YAMAMOTO NAOKI ET AL) 31 January 1995 (1995-01-31) the whole document ----	1
A	US 5 391 647 A (YAMAMOTO NAOKI ET AL) 21 February 1995 (1995-02-21) column 1, line 45 -column 2, line 5; claims 2,3 ----	1
A	KADDAMI H ET AL: "DIFFERENT SOLVENT FREE SYNTHETIC ROUTES TO ORGANIC/INORGANIC HYBRID MATERIALS" MATERIALS RESEARCH SOCIETY SYMPOSIUM PROCEEDINGS. VOL. 576, US, WARRENDALE, PA: MRS, vol. 576, 5 April 1999 (1999-04-05), pages 51-61, XP000897890 ISBN: 1-55899-483-1 the whole document -----	1

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 00/03643

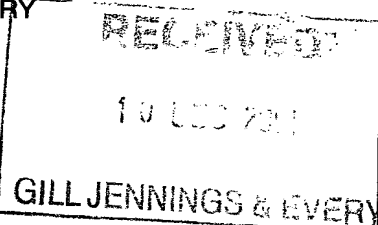
Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 4921881 A	01-05-1990	DE 3720671 A AT 101628 T DE 3887778 D EP 0296486 A ES 2050128 T JP 1016874 A JP 1917069 C JP 6043574 B	05-01-1989 15-03-1994 24-03-1994 28-12-1988 16-05-1994 20-01-1989 23-03-1995 08-06-1994
US 5470910 A	28-11-1995	DE 4133621 A DE 59207816 D WO 9307179 A EP 0607213 A JP 7502055 T	22-04-1993 13-02-1997 15-04-1993 27-07-1994 02-03-1995
EP 0851009 A	01-07-1998	CN 1186090 A JP 10237387 A KR 217961 B NO 971726 A US 5902851 A	01-07-1998 08-09-1998 01-09-1999 25-06-1998 11-05-1999
US 5424375 A	13-06-1995	FR 2625216 A AT 85982 T BR 8807869 A CZ 8809024 A DE 3878676 A DE 3878676 T EP 0325875 A ES 2041821 T WO 8906249 A JP 2641146 B KR 9600856 B	30-06-1989 15-03-1993 09-10-1990 19-10-1994 01-04-1993 01-07-1993 02-08-1989 01-12-1993 13-07-1989 13-08-1997 13-01-1996
EP 0918061 A	26-05-1999	JP 11209596 A JP 11255883 A US 6103854 A	03-08-1999 21-09-1999 15-08-2000
US 5385988 A	31-01-1995	CA 2078949 A DE 69216030 D DE 69216030 T EP 0534753 A JP 2902525 B JP 5209027 A	25-03-1993 30-01-1997 10-04-1997 31-03-1993 07-06-1999 20-08-1993
US 5391647 A	21-02-1995	AU 648374 B AU 9107691 A CA 2071208 A EP 0528038 A WO 9212204 A	21-04-1994 17-08-1992 29-06-1992 24-02-1993 23-07-1992

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To:

GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH
GRANDE BRETAGNE



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NOTIFICATION OF TRANSMITTAL OF
THE INTERNATIONAL PRELIMINARY
EXAMINATION REPORT
(PCT Rule 71.1)

Date of mailing
(day/month/year) 06.12.2001

Applicant's or agent's file reference
CJH01467WO

IMPORTANT NOTIFICATION

International application No.
PCT/GB00/03643

International filing date (day/month/year)
22/09/2000

Priority date (day/month/year)
07/10/1999

Applicant
THE WELDING INSTITUTE et al.

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/



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D-80298 Munich
Tel. +49 89 2399 - 0 Tx: 523656 pmu d
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Authorized officer

Le Bolloch, C

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PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference CJH01467WO	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/GB00/03643	International filing date (<i>day/month/year</i>) 22/09/2000	Priority date (<i>day/month/year</i>) 07/10/1999
International Patent Classification (IPC) or national classification and IPC C09D4/06		
Applicant THE WELDING INSTITUTE et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 5 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☒ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 02/05/2001	Date of completion of this report 06.12.2001
Name and mailing address of the international preliminary examining authority:  European Patent Office D-80298 Munich T I. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer Miao, K Telephone No. +49 89 2399 8584 

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03643

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, pages:

1-6,8,10-23, as originally filed
25-29

7,9,24 as received on 15/11/2001 with letter of 15/11/0200

Claims, No.:

18-20 as originally filed

1-17 as received on 15/11/2001 with letter of 15/11/0200

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/GB00/03643

☐ the drawings, sheets:

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes:	Claims	2,8
	No:	Claims	1,3-7,9-20
Inventive step (IS)	Yes:	Claims	2,8
	No:	Claims	1,3-8,9-20
Industrial applicability (IA)	Yes:	Claims	All claims
	No:	Claims	

2. Citations and explanations
see separate sheet

VII. Certain defects in the international application

The following defects in the form or contents of the international application have been noted:
see separate sheet

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/03643

Section V

Since the subject-matter of Claim 1 is not novel (Art. 33(2) PCT), dependent Claims 5-6 and 9 are still not novel (Art. 33(2) PCT).

As the subject-matter of Claims 1,3-7 and 9-20 is deemed not novel, the said claims are, likewise, not inventive (Art. 33(3) PCT).

1. US,A,4 921 881, which is cited in the International Search Report (ISR), discloses a radiation-hardenable agent for scratch resistant coating of organic glasses, consisting...(A) cocondensate...of (A1) vinyl tri(m)ethoxysilane and their mixtures and (A2) tetra(m)ethoxysilane and their mixtures;
(B) reactive diluent comprising...vinyl and (m)ethacrylic groups; and
(C) photoinitiator.

Examples 1-11 of the US-prior art are relevant.

2. US,A,5 470 910, which is, also, cited in the ISR, discloses a process for producing a composite material,...which process comprises: a) reacting compound a), which contains metal,... to form a stabilised sol.; and b) mixing stabilised sol..., and curing...to form composite material.

Attention is drawn to column 4, lines 32-40 as well as Examples 1-10,12-22 and 24-37 of the US-prior art.

3. EP,A,0 851 009, which is, also, cited in the ISR, discloses resinous composition...comprising...(A) silica-dispersed oligomer solution of organosiloxane...; (B) acrylic resin...; (C) linear polysiloxane diol...; (D) polyorganosiloxane...; and (E) curing catalyst.

The Examples of the EP-prior art are pertinent.

4. US,A,5 424 375, cited in the ISR, discloses process for the manufacture of an article made from...polysiloxane network (1) and (meth)acrylic network (2)

Attention is drawn to the Examples in the TABLE in columns 9-10 of the prior art.

**INTERNATIONAL PRELIMINARY
EXAMINATION REPORT - SEPARATE SHEET**

International application No. PCT/GB00/03643

Section VII

In light of the arguments put forward by the applicant in the letter dated 15 November 2001, the amendments made to pages 7,9 and 24 do not appear to violate Art. 34(2) PCT.

It is pointed out that although page 31 has been submitted as being amended, no amendments appear to have been made.

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JCT Rec'd PCT/PTO 04 APR 2002

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Yet another option is to use inorganic monomer precursors which differ both in their inorganic elements and in the organic groups bound thereto.

5 The ratio of the different inorganic monomer precursors can vary over a wide range, and is typically selected according to the nature of the monomer precursors and the properties required in the final composite material. It has been found, however, that by selecting a ratio within a certain range coatings can be achieved
10 having good clarity, abrasion resistance and resistance to cracking, over a wide range of process parameters. For other ratios, it may be necessary to maintain a tighter control over the process parameters in order to achieve all the above properties in combination. However, in some
15 cases this may not be practically possible in an industrial environment, for instance if prolonged curing of the coating is necessary, in order to achieve the necessary hardness or abrasion resistance.

The preferred ratios of inorganic monomer precursors, expressed as primary network-forming species: total of
20 primary and secondary network-forming species, lie in the range 0.75 to 9, with the more preferred ratios lying in the range 0.78 to 0.88, and the most preferred in the range 0.8 to 0.86. These ratios are particularly suitable when
25 the primary network-forming species is a tetraalkoxysilane such as tetraethoxysilane (TEOS) and the secondary network-forming species is a single-substituted alkoxide such as 3-(trimethoxysilyl)propyl methacrylate (MPTMA).

In order to hydrolyse the inorganic monomer
30 precursors, water is either added to the inorganic monomer precursors, or is synthesised in situ. Typically, hydrolysis of the inorganic monomer precursors is achieved by formation of an homogeneous mixture with water and, optionally, an organic solvent. Alternatively, the
35 precursors may be dissolved in an organic solvent and water added to the resulting solution in a controlled manner, as is conventional in sol-gel techniques, to avoid

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Ausdruckszeit 15. NOV. 11:48

15-11-2001

inorganic monomer precursors, hydrolysis may proceed spontaneously.

The amount of water used in the process of the invention should generally be sufficient to hydrolyse all the inorganic monomer precursors, and will, therefore, depend upon the nature of those precursors, and in particular the number of hydrolysable bonds that they contain. Because water is produced during the polycondensation reaction, it will be not normally be required to use a 1:1 water:hydrolysable bond molar ratio, although such ratios may be used if desired. For instance, where the inorganic monomer precursors are tetraalkoxysilanes, having four hydrolysable bonds, preferably the molar ratio of water:hydrolysable bonds will approach 2:4, such that the molar ratio of water:tetraalkoxysilanes will approach 2:1. Higher amounts of water may be used, but as unreacted water must be removed prior to formation of the final composite, this is less preferred.

Additional water may be added after initial hydrolysis of the inorganic monomer precursors, and also on mixing with the polymerisable organic species, although the latter is less preferred.

When different inorganic monomer precursors are to be used in the present invention, as is preferred, hydrolysis of those precursors may be conducted separately from one another, sequentially or in combination, i.e. in one pot. Generally, separate hydrolysis of different inorganic monomer precursors is preferred, as it allows greater control of the sol-gel process, and gives more consistent results in terms of coating properties. When hydrolysis of the different inorganic monomer precursors is carried out separately, and the resulting sols that are formed are then mixed together to form an homogeneous mixed sol. It is further preferred to age each of the different sols prior to mixing them together, preferably isolated from the atmosphere e.g. in a sealed container, to enhance storage life. Typically, each sol should be aged for a period of

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15-11-2001

The results illustrate that the coatings of the invention have similar hardness to, or better hardness than, the PHC587 and AS4000 silicone hardcoats. While the coatings of the invention are not as hard as the SHC1200
5 silicone hardcoat, by varying the molar ratio of the inorganic network-forming species coatings can be achieved having superior hardness to this material and which are clear and uncracked, as illustrated below.

Furthermore, there are drawbacks associated with the
10 use of the commercially-available silicone hardcoats which are not experienced with the coatings of the present invention. For instance, the commercially-available silicone hardcoats cannot be properly hardened when deposited on acrylic substrates, since they require a
15 curing temperature of around 130°C, which causes acrylic substrates to deform. Furthermore, they can only be coated to thicknesses of up to 10 µm, otherwise cracking occurs. Furthermore, of the three commercially-available silicone hardcoats tested, only PHC587 can be used without first
20 applying a primer coating. In contrast, the coatings according to the present invention do not need a primer.

Example 6

A sol was prepared as follows:

Component A:

25 250.2 g of tetraethoxysilane (TEOS) was placed in a beaker, and an intimate mixture of 221.0 g methanol and 43.24 g of distilled water and 0.5 g 36% hydrochloric acid was added thereto.

Component B:

30 60 g of 3-(trimethoxysilyl)propylmethacrylate (MPTMA) was placed in a beaker, and an intimate mixture of 44.5 g methanol, 6.52 g distilled water and 0.2 g 36% hydrochloric acid was added thereto.

The ratio of silanes in Component A: total silanes in
35 Components A and B was 0.833, as compared to 0.624 in Example 1.

AMENDED SHEET

CLAIMS

1. A process for providing a protective coating on a substrate comprising
- 5 (1) applying to the substrate a coating composition comprising an homogeneous mixture comprising an inorganic sol and polymerisable organic species, the inorganic sol being obtainable by hydrolysing hydrolysable inorganic monomer precursors to form inorganic monomers;
- 10 (2) polymerising the polymerisable organic species; and
- (3) polymerising the inorganic monomers, wherein polymerisation of the organic monomers is initiated prior to completion of polymerisation of the inorganic monomers, to form a solid coating on the substrate.
- 15 2. A process according to claim 1, wherein hydrolysis of the hydrolysable monomer precursors takes place in the presence of a mineral acid.
3. A process according to claim 1 or claim 2, wherein the hydrolysable inorganic monomer precursors are alkoxides, preferably alkoxysilanes.
- 20 4. A process according to any preceding claim, wherein the inorganic sol is obtainable by hydrolysis of first and second hydrolysable inorganic monomer precursors, the first hydrolysable inorganic monomer precursors being different
- 25 to the second hydrolysable inorganic monomer precursors and having at least two hydrolysable groups, and the second hydrolysable inorganic monomer precursors having at least one non-hydrolysable group.
5. A process according to claim 4, wherein the ratio of
- 30 the first hydrolysable monomer precursors: total of first and second hydrolysable monomer precursors is in the range 0.75 to 0.9 and the coating composition comprises at least 50% by weight inorganic monomers.
6. A process according to claim 5, wherein the ratio of
- 35 first hydrolysable monomer precursors: total of first and second hydrolysable monomer precursors is in the range 0.78 to 0.88.
7. A process according to any of claims 4 to 6, wherein the first hydrolysable monomer precursors comprise a

AMENDED SHEET

tetraalkoxysilane and the second hydrolysable monomer precursors comprise an alkoxysilane having at least one ethylenically-unsaturated group and/or an epoxy group.

8. A process according to claim 7, wherein the first
5 hydrolysable inorganic monomer precursors comprise tetraethoxysilane and the second hydrolysable precursors comprise 3-(trimethoxysilyl)propylmethacrylate.

9. A process according to any of claims 4 to 8, wherein
10 the sol is obtainable by hydrolysing the first and second hydrolysable monomer precursors separately from one another to form a first sol and a second sol, and mixing the first and second sols.

10. A process according to any preceding claim, wherein
15 the sol is aged prior to mixing with the polymerisable organic species.

11. A process according to any preceding claim, wherein the polymerisable organic monomers are added to the sol in liquid or solution form.

12. A process according to any preceding claim, wherein
20 the polymerisable organic species are polymerisable to form a thermosetting material.

13. A process according to claim 12, wherein the polymerisable organic species are selected from carbonates, urethanes, urethane precursors such as isocyanates or
25 diisocyanates and polyols, urethane acrylates and terephthalates.

14. A process according to any preceding claim, wherein the substrate is selected from thermoplastic materials, thermosetting materials, metals, ceramic materials, natural
30 materials, or any of these materials which are pre-coated e.g. with a decorative finish.

15. A process according to claim 14, wherein the substrate comprises a polycarbonate or a polyacrylic material.

16. A coated substrate obtainable by a process according
35 to any preceding claim.

17. A coated substrate according to claim 16, wherein the coating is transparent.

RECEIVED

PCT

INTERNATIONAL SEARCH REPORT

(PCT Article 18 and Rules 43 and 44)

Applicant's or agent's file reference CJH01467W0	FOR FURTHER ACTION see Notification of Transmittal of International Search Report (Form PCT/ISA/220) as well as, where applicable, item 5 below.	
International application No. PCT/GB 00/ 03643	International filing date (day/month/year) 22/09/2000	(Earliest) Priority Date (day/month/year) 07/10/1999
Applicant THE WELDING INSTITUTE et al.		

This International Search Report has been prepared by this International Searching Authority and is transmitted to the applicant according to Article 18. A copy is being transmitted to the International Bureau.

This International Search Report consists of a total of 3 sheets.

☒ It is also accompanied by a copy of each prior art document cited in this report.

1. Basis of the report

- a. With regard to the **language**, the international search was carried out on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.

☐ the international search was carried out on the basis of a translation of the international application furnished to this Authority (Rule 23.1(b)).

- b. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international search was carried out on the basis of the sequence listing :

☐ contained in the international application in written form.

☐ filed together with the international application in computer readable form.

☐ furnished subsequently to this Authority in written form.

☐ furnished subsequently to this Authority in computer readable form.

☐ the statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.

☐ the statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

2. ☐ **Certain claims were found unsearchable** (See Box I).

3. ☐ **Unity of invention is lacking** (see Box II).

4. With regard to the **title**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established by this Authority to read as follows:

5. With regard to the **abstract**,

☒ the text is approved as submitted by the applicant.

☐ the text has been established, according to Rule 38.2(b), by this Authority as it appears in Box III. The applicant may, within one month from the date of mailing of this international search report, submit comments to this Authority.

6. The figure of the **drawings** to be published with the abstract is Figure No. _____

☐ as suggested by the applicant.

☐ because the applicant failed to suggest a figure.

☐ because this figure better characterizes the invention.

☐ None of the figures.

INTERNATIONAL SEARCH REPORT

International Application No.

PCT/IB 00/03643

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 C09D4/06 C08F283/12 C08F275/00 C08G77/442 C08J7/16

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 C08F C08G C09D C08J

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

WPI Data, EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 4 921 881 A (MORLOCK GERHARD ET AL) 1 May 1990 (1990-05-01) the whole document	1-20
X	US 5 470 910 A (SPANHEL LUBOMIR ET AL) 28 November 1995 (1995-11-28) claim 1	1, 18
X	EP 0 851 009 A (MATSUSHITA ELECTRIC WORKS LTD) 1 July 1998 (1998-07-01) page 5, line 49 -page 6, line 6; claims 1, 6, 10 page 9, line 17-30	1-3, 18
A	US 5 424 375 A (HE XIONGWEI ET AL) 13 June 1995 (1995-06-13) column 2, line 40-59	1
	--- -/--	



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

* Special categories of cited documents :

A document defining the general state of the art which is not considered to be of particular relevance

E earlier document but published on or after the international filing date

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Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT

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